

AMERICAN RAILROAD JOURNAL.

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HENRY V. POOR, Editor.

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American Railroad Journal.

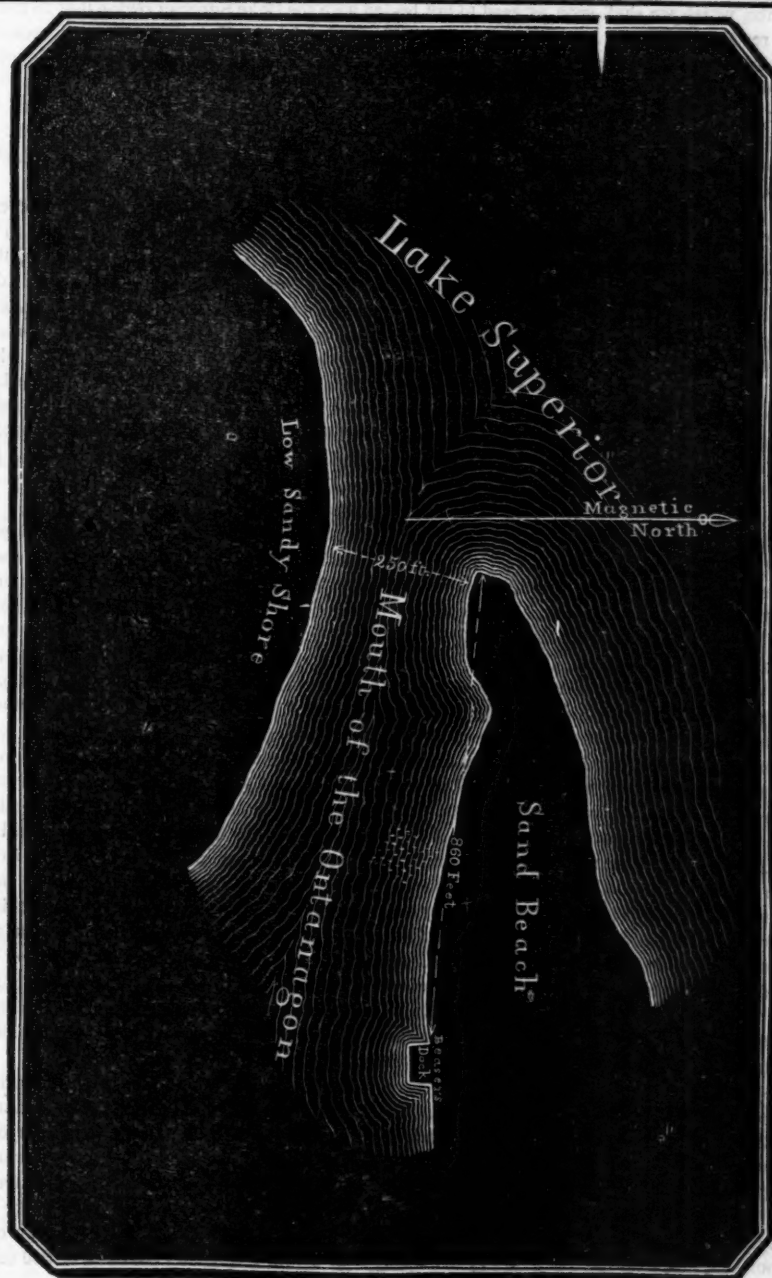
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Saturday, November 3, 1849.

Lake Superior Copper Region.

Several meetings have been held the past summer in different places about Lake Superior relative to petitioning Congress for appropriations of money for building a ship canal past the Falls of the St. Mary. This subject, of great consequence to this region, has before been presented to Congress, and surveys have been made by authority of government. An act, authorising an appropriation at one time passed the Senate, but was lost in the House. From the energetic measures now adopted, better success is anticipated the coming session of Congress. We were present at the mass meeting at Eagle River on the 11th October, and have prepared the following report of its proceedings.

Appropriations are also required for other points specified in the proceedings. One of these is for piers at the mouth of the Ontonagon river. This river would be navigable for steamboats for twelve miles up, but for the sand bar outside of the mouth, upon which the water is generally about six feet deep, while within the channel is at least fifteen feet. Being at this place we made a survey of the mouth of the river, a sketch of which is here given; the



sea at the time was too rough to admit of obtaining the soundings—strong north and east winds prevailing for many days. The bar is changeable with the effect of the winds upon the water, and at times is so much diminished, that any vessel can enter.—Were one or two piers run out beyond this bar into deep water, which we are told, and which we should judge by the waves, cannot be more than 300 or 400 feet beyond the point, the river would at all times be kept open. The mouth is a place of much importance for the valuable mines near the river, about twenty miles up its course, and also for the fine agricultural and timber lands through which the river passes. Were this improvement made, it would be but a short time before a considerable population had settled along this river, and plank roads, one of which is already projected, would be constructed from the mouth to the mines in the interior. We have in a former number described the Minnesota mine in this district, and of this as well as of other mining tracts in the same vicinity, we are now furnished with further details of no little interest and importance, which we shall soon proceed to lay before our readers.

A mass meeting of the citizens of Houghton and Ontonagon, Lake Superior, was held at Eagle River on the 11th day of October, for the purpose of taking into consideration the urging upon Congress the necessity of making suitable appropriations for the improvement of harbors on the Lake, and especially for a canal past the Falls of the River St. Mary. Levi Hanna, Esq., was called to the chair, and M. W. Kelsey, Esq., was appointed secretary.

Messrs. J. T. Hodge, E. C. Roberts and J. R. Livingston, being appointed a committee to draft an address and resolutions, soon after presented the following report.

Mr. Chairman—The subject we are met to consider can be regarded with but one opinion by all acquainted with the rapidly increasing mining business of this section of the country. From our own observations, and the reports of scientific men, we are persuaded it is wonderfully rich in mines of copper and in iron ores. From actual results the opinion is forced upon us, that in a very short period this region will supply our country with all the copper it requires, which, heretofore, with small exception, has been imported from the mines of Cornwall, Cuba and Valparaiso. The value of these importations according to the Custom House returns is about \$2,000,000 per annum, equivalent to say 6,000 tons of copper. One of our mines is now furnishing nearly one tenth of this amount, and another year we believe not far from one fifth will be sent from this region—equal in value to \$400,000.

There are also in this same region bodies of iron ore of extraordinary extent and of excellent quality. This ore lies in ledges like common rocks, and the quantities upon the surface might long supply extensive works. It is of a character well suited for the manufacture of bar and boiler plate iron, and must find a large market in the country bordering the lower lakes, where, excepting about Lake Ontario, there are no mines that yield ores suitable for these purposes. Yet the expenses attendant upon the transportation of so heavy an article may long keep these mines comparatively unimproved.

To remove every obstruction in the way of a free communication between this mining region and the great markets of the country is of the last consequence. The most serious obstacle is the Falls of the St. Mary, which cause detention and increased cost to our supplies, and impose a heavy tax upon the metals taken out of vessels and hauled over the

portage. The lands bordering these falls belonging to the United States, no step can be taken towards constructing a ship canal except by act of Congress, and, inasmuch as the United States, the principal proprietor of the mineral lands, would be the party especially benefited, it seems proper that we should present the matter in its true light to the Senators and Representatives in Congress, petitioning them to take it into consideration and adopt the measures we are persuaded are for the benefit of the whole country. And when we consider that large sums are annually expended for the improvement of harbors and removal of obstructions upon our coast, that foreign products may find more ready access for our use, we cannot but have confidence that so great an object as the development of a new internal resource will be deemed of no less consequence, and no less deserving the fostering care of our government.

We therefore beg leave to present the following resolutions:

Whereas, It has become apparent to all acquainted with the Lake Superior region that its mines must soon furnish the United States with domestic copper in place of the foreign metal hitherto imported, and also add this article to our exports; and that it is upon the iron mines of this region alone that the extensive country bordering the lakes must soon be dependent for its supplies of bar and boiler-plate iron, and

Whereas, A serious obstruction to the development of these mines exists in the interruptions to the navigation at the falls of the river St. Mary, the outlet of Lake Superior, causing delays and additional expenses both in the receiving of supplies and shipment of metals; and moreover rendering wholly useless the great fisheries of the upper lake, which, but for the falls, would long since have been improved to the great benefit of our citizens and the lake country, by the encouragement this business would have given to the settlement of tracts about its harbors; therefore

Resolved, That the time has come when the subject of the construction of a ship canal past these falls should be strongly urged upon the Senators and Representatives in Congress, as a matter highly conducive to the interests of the United States, both as the principal proprietor of the mining lands and as a people rendered thereby independent of foreign resources for so important an article as copper.

Resolved, That we confirm the nomination of the Hon. Messrs. Ashman, McNair and Allen, appointed at previous conventions a delegation to visit Washington to present our petitions, and urge their acceptance; and that moreover we respectfully request all persons in other States, interested directly in this mining region, or more generally in the prosperity of our country, to afford what aid may be in their power in furthering the efforts of this delegation. And that Levi Hanna, Esq., and Judge Wells Hawes, who propose to be in Washington the coming winter, be particularly requested so to time their visit, that they may bring their extensive knowledge of the resources of this country to the aid of the aforesaid delegation.

Resolved, That while we regard the construction of a ship canal past the falls of the St. Mary as the great object to be attained, of primary importance to the whole country, we also strongly recommend the construction of piers at the mouth of the Ontonagon river, a point presenting great facilities for the making of a good harbor at little cost, and the only such point within a range on the coast of 200 miles, viz: from Eagle Harbor to LaPointe.

Resolved, That we also strongly recommend the improvement of Eagle Harbor by the removal of the obstructions at its mouth, a work involving little expense.

The report having been unanimously adopted, a committee was appointed, consisting of Messrs. J. T. Hodge, J. R. Livingston and S. W. Hill to draft petitions to Congress relative to the objects of the meeting—the committee being instructed to ask also an appropriation for a light house at or near the mouth of Eagle River.

A committee of seven was also appointed to circulate the petition thro' different portions of the Lake country. A vote of thanks was passed to Hon. Samuel Ashmun and J. R. Livingston, Esq., delegates from the late convention at the Sault de Ste. Marie, for their attendance; also a request that papers friendly to the interests of this section of the country should publish the proceedings of this meeting.

The meeting then adjourned.

The following is the petition prepared in pursuance of the vote of the meeting, and since circulated through the Lake country.

To the Senate and House of Representatives of the United States in Congress assembled:

Your petitioners, resident, or otherwise interested in the lands on the South Shore of Lake Superior, respectfully set forth—

That the development of the extraordinary resources of this region and the sale of the lands belonging to the United States is much impeded by obstructions to a free communication with other parts of the country, of these the interruption to the navigation by the Falls of the St. Mary, the outlet of Lake Superior, is of the most serious consequence, causing delays and increased expense in the reception of supplies and shipment of metals; that the shores of the river at these falls are well suited for the construction of a ship canal at moderate cost, not exceeding one mile in length, and not requiring more than two locks.

That the river Ontonagon passing through a mineral region of great value, presents at its mouth the only point where a good harbor can be had for a distance on the coast of two hundred miles, viz: from Eagle Harbor to LaPointe: that a sand bar now prevents the entrance of the vessels navigating the lake into this capacious river, which obstruction may be entirely removed by the construction of piers at moderate cost.

That the otherwise excellent harbor, called Eagle Harbor, is obstructed at its entrance by a small rocky ledge, to the great danger of vessels entering, which obstacle may be removed by a small expense in blasting out these rocks.

That a light house is much wanted at or near the mouth of Eagle River, from which point the great proportion of copper hitherto shipped has been furnished.

We therefore earnestly request that the National Legislature grant the necessary appropriations for these several objects.

Indiana.

We feel great satisfaction in publishing the subjoined communication, and we earnestly hope that its recommendations will be followed. Tho failure of Indiana at the present time to meet her engagements would inflict an injury upon the State twenty times greater than the amount of the instalment due in January. There are now in process of construction over 500 miles of railway in this State. Nearly all these roads will require some foreign aid to complete them, and this can only be obtained by

maintaining the faith of the State inviolate. An English iron manufacturer, in conversation with us a few days since, objected to taking the bonds of the roads in this State, on the ground of her past failure to meet the interest on her debt. This stain she can soon wipe out if she will; and the success of all her public works hangs upon the payment of a paucity sum which she can pay without any inconvenience. We hope that all her citizens will see that they are directly interested in the prompt payment of the January dividend, not only as a matter of justice but of good policy.

INDIANA AGENCY, }
New York, Oct. 8, 1849. }

To His Excellency, P. C. Dunning, Governor of Indiana:

Sir—As the period approaches for the preparation of the material for your annual communication to the Legislature of our State, I have thought that I might be of some service to you, by throwing together such facts and suggestions, connected with the public debt of the State—its present condition and prospects—as will enable you to speak in detail upon that interesting branch of the public service.

In 1847, when the arrangement of the State's debt was made with her creditors, the debt, exclusive of interest, was \$11,045,000.

There has been surrendered and converted into new stock to 1st July last, . . . \$9,530,000
Since July 1st, . . . 33,000
9,563,000

Leaving yet to come in 1849 bonds or \$1,488,000

These bonds are held in Europe and in this country, and are coming in gradually! I have little doubt that all will be surrendered as soon as arrangements can be made by the holders to obtain the assent of the parties interested in them.

The interest paid July last at this agency, was \$95,300, being two per cent. on \$4,755,000, the debt at that time, under the new arrangement. In January we shall probably have to pay \$100,000, as 235 bonds coming in from July to January will make up that amount.

We commenced paying interest with July 1847, and to the present time have made five semi-annual payments, amounting in the aggregate to near half a million of dollars. Meantime the State Stock has been gradually rising in value until it has advanced to 70 cents on the dollar—its full value, taking six per cent. interest per annum as the standard. This must be gratifying to the friends of our State, as it furnishes unmistakable evidence of an increasing confidence in her resources, as well as a firm reliance upon her integrity.

The large amount of treasury notes which have heretofore been paid for taxes, has somewhat embarrassed the State treasury. We have consequently at times been without the means to pay our interest as it became due. For the past dividends this deficiency has been supplied by borrowing the necessary amounts from our banks. To save us the necessity of borrowing, and to make our dividends, both of them payable after the annual revenues are paid into the State treasury, the legislature, by joint resolution last winter, instructed me to negotiate an extension of the January payment to March. In June last I prepared a circular upon the subject and sent it to the stockholders. In this circular I proposed that our January dividend should be postponed until the first Monday in March, when it should be paid with six per centum per annum interest from 1st of January. To the present time I have answers from 208 out of 549 holders, as shown by our July dividend book.

They, so far, almost unanimously agree to the postponement; some, however, consent on condition that all the others do the same, while several have refused positively to come into the measure. Others expressing an unwillingness to refuse to do anything in reason that the State may desire, reluctantly yield their assent.

The proportion withholding their consent—though ample time has been afforded—raises a fear in my mind that the proposition will not be agreed to by even a majority of them.

Such a state of things would not only be troublesome but perplexing. If the money should not be ready to pay the dividend in January, this agency would have to issue certificates for interest to those who declined the arrangement to postpone, and would have to be prepared to pay in March the dividend to those who had given their assent, and on each one of these payments interest would run against the State from the 1st of January, thereby greatly increasing the complex-

ity of the dividend and interest accounts. To avoid these evils, would it not be better for the State to borrow of the bank enough money for that purpose, and pay the January dividend in cash on the day it matures? By doing so, the State will meet the expectations of her friends, which have been that she would make all her payments, under this arrangement, promptly in cash. Other considerations, also, would seem to make this course preferable. As

1. The State stock is now at a price which places it by the side of the stock of the regular dividend paying States. To withhold or postpone a dividend would inevitably depreciate it, and impair the re-established credit of the State.

2. The State is now deeply interested in the completion of the Wabash and Erie canal. The funds now available for that purpose will hardly accomplish it. If our bondholders by our conduct, are assured of the stability and resources of the State, by having their interest regularly paid them, they would not only be better prepared, but better disposed, to make up the necessary sum under the law, to bring that valuable work in complete connection with the Ohio river at an early day.

3. There is hardly a neighborhood in the State that is not interested in some line of railroad in contemplation. These roads are wanting aid, and seek it away from home. The most certain method of securing this aid will be, to establish to the world that the State is rich in resource and prompt in payment.

4. In borrowing the money from our bank, we pay interest to an institution owned almost entirely within the State—by the State herself and her citizens, who make all the profits accruing from the loan—when by paying interest on the certificates, or on the extension of time, we send money out of the State to persons abroad.

5. By paying in money the State avoids the expense and confusion necessarily growing out of issuing certificates—many of them for ten dollars and twenty dollars—and of keeping complex interest accounts.

I am not aware that a feeling of indifference towards this debt exists in any part of the State. The debt being now arranged, it would be unfortunate if such were the fact. The bondholders have taken the Wabash and Erie canal for one half their debt, the stock of which, with near three years of interest accumulated upon it, is now worth but 17 cents on the dollar. They have advanced \$800,000 to finish the canal, and look to the State for but the other half of the original debt. This debt, I may say, is one of compromise. Favorable to this State, for it enables her to stand up firmly under all her liabilities. We are all, as citizens, parties to this compromise; for the State imposes a share of her liabilities as she sheds a portion of her character upon each citizen. The world looks upon our new stock as being clear of all questions which hung about the old bonds; indeed the State has authorized them so to be regarded. As the debt is without question, and the State without question able, I respectfully submit whether it would not be the better policy to provide the money to pay the interest as it becomes due, rather than to postpone it in part, issue certificates for part, and at the end foot a heavy bill of interest and expenses.

When I began I did not intend to run out in such length, but being familiar with the subject, I have ventured to trespass upon your attention, under a hope that I shall not incur the charge of obtrusiveness.

What I have said here, is in a spirit of anxiety for our State's welfare, and entirely, at your service, to be used as you may deem most proper.

I am your very ob't serv't

JAMES COLLINS, JR.

Ohio.

Scioto and Hocking Valley Railroad.

H. V. Poor, Esq.,

Dear Sir:—I take pleasure in informing you that the preliminary survey of the Scioto and Hocking Valley Railroad is now progressing. J. W. Webb, Esq. and corps, commenced at this place, and have reached Chillicothe, on the east side of the Scioto river, running thro' the towns of Lucasville, Pike-town and Richmondale, and will proceed from Chillicothe to Circleville, thence to Lancaster and Newark; and we hope on the opening of the spring to commence a final location. The route so far is in the highest degree favorable.

Previous to the commencement of the survey the Engineers run over the ground from this place, via the iron and coal region to Jackson, thence to Richmondale to Chillicothe, and found the route so very favorable, and the prospect of an iron and coal bus-

iness so enormous, that we have serious views of reaching Chillicothe by that route. As the work progresses, I will advise you.

Portsmouth, Oct. 20th, 1849.

In addition to the above, we copy the following from the Scioto Gazette:

The party conducting the trial survey of this line arrived in our city on Saturday last. The measured distance from Portsmouth—keeping on the east side of the Scioto, through Piketowa and Richmondale, crossing at Kilgore's ford, and continuing it to the river bridge at Chillicothe—is exactly 50 miles. Mr. Taylor, one of the engineers, informs us that the grade all the way is most favorable—being mainly a gradual rise from the Ohio, with but few depressions. The height of the river bank at the Scioto bridge here, is 225 feet above very low water mark in the Ohio. The party left on Monday, on their way northward.

We learn that the friends of the work, in Pike county, have resolved to raise 50,000 dollars for it by private subscription; and that their success is well guaranteed by what they have actually accomplished.

Pittsburgh and Cleveland Railroad.—We learn from C. Prentiss, Esq., of Ravenna, President of the Cleveland and Pittsburgh railroad, that the whole is now under contract from here to Wellsville.

The contractors are J. S. Chamberlain & Co., of Vermont. Men whose wealth, business capacity and great experience will insure the construction of the road at the time specified and in the best style.

These gentlemen did work on the Wabash and Erie Canal to the amount of one million dollars, about as much on the St. Lawrence Canal—and completed 70 miles of the Rutland railroad in Vermont at a cost of \$1,000,000.

They have now under contract 75 miles of the Ogdensburg railroad, which they will complete by June next.

We mention these things to show that the work is in hands fully able to complete it.

75 miles will be finished from Cleveland south, by November 1, 1850, and the whole by Nov. 1, 1851.

To the present condition of this road, we are almost wholly indebted to the untiring industry, and energy of one man. That man is C. Prentiss, Esq., its excellent President.—Clev. Free Dem.

Maine.

Traffic Table of the Atlantic & St. Lawrence railroad, for the months of August and September:—

	Passengers.	Freight.
August.....	\$7,517 55	\$2,714 97
September.....	7,317 76	2,725 43
	14,835 31	5,440 40

Total receipts for freight and passengers\$30,275 71

Of the above sums there were received for freight and passengers passing between Portland and North Yarmouth, and transported over the Brunswick and Bath road, the following amounts:

	Passengers.	Freight.
August.....	\$1,819 65	\$21 74
September.....	1,899 95	42 63
	3,719 60	64 37

Total receipts from freight and passengers derived from this source..\$3,783 97

YORK AND CUMBERLAND RAILROAD.

From all that we can gather touching the prospects of the York and Cumberland railroad, we think we are warranted in saying that it is in full tide of success.

At a meeting of the stockholders of Gorham on the 18th inst., to which we referred in a former number of this paper, A. C. Morton, Esq., resigned the situation of director of the road, though he still retains the position of consulting engineer.

Francis O. J. Smith, Esq., was unanimously elected in place of Mr. Morton, as a director of the company, and the board was organized on the 27th inst. as follows:

F. O. J. Smith, President.
John A. Poor, Vice President.
Toppan Robie, Treasurer.
David Hayes, Clerk and Secretary.

The means now at the command of the company will justify the completion of the road to Gorham as soon as the first of July next. A satisfactory arrangement has been made for the iron already delivered, with Messrs. Wainwright & Tappan, of Boston.

The grading of the line from Gorham to Morrill's Corner in Westbrook, is principally accomplished, and the line from Morrill's Corner to the depot grounds in Portland, a distance of about 3 miles, has been carefully surveyed and the right of way secured or arranged on favorable terms for nearly the whole distance.

A lot has been contracted for of Messrs. C. Q. & A. W. H. Clapp, upon their flats now being filled in Back Cove, for a depot, to extend from Chestnut to Pearl streets, 500 feet in length by 120 feet in width with an 80 ft street on each side, to be in common with the Kennebec and Portland road.

Hon. F. O. J. Smith and Messrs. Clapp have contracted to furnish the money to build this depot, and it is intended to make it one of the most spacious and elegant structures of the kind in the country.

We are informed that a circular will shortly be issued to the stockholders giving a full view of the condition and prospects of the company.

Our readers will recollect that a circular was issued by the directors a short time since, in which they expressed their determination not to sell the stock below par, or pay extra interest for money, to go forward with the road. We are gratified to learn that this policy has had the effect to improve the credit of the company. In the negotiations with the land owners, and for the iron the effect of this policy has been most salutary. Additional stock has been taken to a very considerable amount, and the old stockholders come forward with alacrity to meet the calls of the directors.

It may well be questioned whether other enterprises have not materially suffered by a too ready submission to the demand for exorbitant usury.—The instant a corporation becomes a prey to such influences it loses in the confidence of the public.—*Portland Advertiser.*

Institution of Mechanical Engineers.

ON THE EXPANSIVE ACTION OF STEAM, AND A NEW CONSTRUCTION OF EXPANSION VALVES FOR CONDENSING STEAM ENGINES.

By W. FAIRBAIRN, Esq.

The innumerable attempts that have been made to improve the principle of the condensing steam engine since the days of its celebrated inventor Watt, have nearly all proved failures, and have added little, if anything, to the claims, next to perfection, of that great man's ideas. It would be idle to speculate upon the various forms and constructions from that time to the present, which have been brought forward in aid of the original discovery of condensation in a separate vessel. All that has been done is neither more nor less than a confirmation of the sound views and enlarged conceptions of the talented author of a machine, which has effected more revolutions and greater changes in the social system, than probably all the victories and all the conquests that have been achieved since the first dawn of science upon civilized life.

It would be endless to trace the history of the successful and unsuccessful attempts at improvement, which for the last half century, have presented themselves for public approval; suffice it to observe, that no improvement has been made upon the simple principle of the steam engine as left by Watt, and but few upon its mechanism. Among the latter may be enumerated the improvements in the construction and mode of working the valves; and of these, the D valve, by the late Mr. Murdoch, and the use of tappets as applied to the conical valves, appear the most prominent and the most deserving of attention.

In the construction of the parallel motion, the application of the crank, the governor, and the sun and

planet motions, all of which have risen spontaneously from the mind of Watt, there is no improvement. The principles upon which all of them are founded have been repeatedly verified beyond the possibility of a doubt, and their mechanism is at once so exceedingly simple, and so ingeniously contrived, as to limit every attempt at improvement in those parts of the steam engine. What appears to be the most extraordinary part of Mr. Watt's engine is its perfect simplicity, and the little he has left to be accomplished by his successors.

It will be in the recollection of most persons conversant with the steam engine, that the hand gear for working the valves by the air pump or plug rod, gave a self-acting and continuous motion to the machine; and the facility which these means afforded for moving the engine in any direction, and at any required velocity, gave it a degree of docility and power beyond the expectations of its most sanguine admirers.

For a considerable length of time the hand gear was the best and most effective mode of applying the motion of the steam engine to the valves;—subsequently, the oscillating and revolving tappets, fixed upon a shaft, and driven by wheels or by an eccentric, came into use, and, by means of vertical rods, communicated motion to the valves, and thus a similar effect was produced as by the hand gear; next came Mr. Murdoch's D valve and eccentric motion, which, for simplicity, has never yet been equalled. The D valve, and the flat plate valve, are nearly synonymous, with this difference only, that the D valve presses with less force upon the face, and consequently works easier than the flat valve, which in every case is exposed to the full pressure of steam. It is true that means have been adopted to obviate this objection in large engines, by a preparation on the back of the valve which is made steam tight; and, by a communication with the condenser, a vacuum is formed over a proportionate area of surface, sufficient to equalize the pressure, and admit an easy motion of the valve.

The expansive principle upon which steam engines are now worked, and the economy which this system has introduced in the expenditure of fuel, has effected considerable changes in the working of the valves, and has rendered the D and plate valves almost inadmissible for such a purpose. To the skill, ingenuity, and careful attention of the Cornish engineers, we are indebted for many of the improvements connected with the use and application of expansive steam; and taking into account the high price of coals, and the urgent necessity of economy in those districts, which, combined with a system of registry and encouragement held out by premiums, as described by Mr. Jno. Taylor, we may reasonably conclude that other parts of the kingdom have been greatly benefited by the excellent examples set before them by the Cornish miners and engineers.

For a great number of years, and up to a recent period, the economy of steam and the working of the steam engine expansively, were but imperfectly understood in the manufacturing districts: and although the Cornish miner set an excellent example, and exhibited a saving of more than one-half the fuel, there were, nevertheless, few, if any, attempts made to reduce what is now considered an extravagant expenditure in most, if not the whole, of our manufactories. But, in fact, the subject was never brought fairly home to the mill owners and steam navigation companies, until an equalization or reduction of profits directed attention to the saving attainable by a different system of operation.

Ten years ago, the average or mean expenditure of coal, per indicated horse power, was computed at from 8 to 10 lbs. per horse power per hour; but now it is under 5 lbs. per horse power per hour in engines that are worked expansively; and even then they are far below the duty of a well regulated Cornish engine, which averages from 2½ to 5 lbs. per horse power per hour.

This difference in the consumption of coal may be attributed to two causes: first, the conditions under which the duty of two engines (that of the Cornish miner and the manufacturer) are respectively performed. The first being chiefly employed in pumping water, has the benefit of alternate action in overcoming the inertia of a large mass of matter, which, when once in motion, is easier continued, for a definite time, than a continuous power of resistance,

such as exhibited in corn and cotton mills. Another cause is the greater care and attention which the Cornish man pays to his boilers, steam pipes, &c.; they are never left exposed, but are carefully wrapt up in warm jackets, and well clothed, to prevent the escape of heat. Even at the present day, it is lamentable to see (in the coal and iron districts) the great and extravagant waste that is continually going on, for want of a little considerate attention in this respect. The only excuse is the cheapness of the fuel; but that is not an excuse, for if one-half can be saved, and coal could be got at 1s. per ton, it is certainly desirable to save sixpence out of the shilling, when that can be accomplished at a trifling expense. But one of the chief, if not one of the most important reasons for the exercise of economy in fuel, is the reduction of profits on articles manufactured by power; under these circumstances, a saving in coal becomes a consideration of some importance; and to these reductions alone may be traced the powerful stimulus which of late years has been prevalent in that direction. The low rate of profit in manufacturing operations, and a desire to economise and reduce the cost of production to a minimum, has been of great value in its tendency to improvement in the economy and efficient use of fuel;—and also to the use of high-pressure steam, and its expansive action when applied to the steam engine. In France, and most other parts of the continent, the system has been long in use; and although its effects, as well as its economy, have been long known in this country, it was only within the last few years that the benefits arising from it were appreciated.—For a great number of years a strong prejudice existed against the use of high-pressure steam, and it required more than ordinary care in effecting the changes which have been introduced; it had to be done cautiously, almost insidiously, before it could be introduced. The author of this paper believes he was amongst the first in the manufacturing districts who pointed out the advantages of high pressure steam, when worked expansively; and for many years he had to contend with the fears and the prejudices of the manufacturers, before the present system of economical working was adopted.

The first attempt was by improvement in the construction of boilers; and subsequently in the valves of the steam engine, adapted to either low or high pressure steam, when worked expansively; the latter of which it is the principal object of the present paper to develop.—*Practical Mechanic's Jour.*

To be continued.

The Pacific Railroad.

ST. LOUIS CONVENTION.

We have now, through the St. Louis papers, received full reports of the proceedings of this convention; and for the purpose of preserving a record of a meeting of so much importance, as well as to give to our readers all its important results, we transfer the following condensed report to our columns. The convention was organized by the appointment of the Hon. Stephen A. Douglass, of Illinois, as President, and the following gentlemen as Vice-Presidents and Secretaries:—

For Vice Presidents—Wm. L. Totten, of Pennsylvania; Samuel Forrer, of Ohio; Samuel Emison, of Indiana; Henry J. Eastin, of Kentucky; Hon. Joseph Williams, of Iowa; Charles Bracken, of Wisconsin; Henry S. Geyer, of Mississippi; John Biddle, of Michigan; Amherst K. Williams of N. York; Hon. W. B. Scates of Illinois.

For Secretaries—A. B. Chambers, of Missouri; W. H. Wallace of Iowa; A. S. Mitchell, of Kentucky; W. G. Minor, of Missouri; T. A. Stewart, of Illinois.

Judge Douglass, on taking his seat as President, made some remarks on the great importance to the whole country of the proposed work, and said that

* See paper read before the Geological Society of Manchester, in the year 1840, on the Economy of Fuel.

† See Report on the Prevention of Smoke and Economy of Fuel.—Transactions of the British Association, 1844.

the only obstacle to its success would be found in the conflicts of local interests, which would embarrass the discussion of the question in Congress and elsewhere. He was greatly encouraged, however, by the aspect of the convention, and trusted that all sectional feelings would be laid aside and an earnest and united effort made for the accomplishment of the work.

The convention adjourned at half past one o'clock in the afternoon, to meet again at nine o'clock the next morning.

SECOND MORNING.

After the passage of a resolution authorizing the President of the convention to appoint three from each State a committee on resolutions, the following resolution, offered by the delegation from St. Charles county, Missouri, was then up for discussion:

Resolved, That this convention does consider the prime object of its appointment and meeting to be, to elicit an expression of the public opinion, and the public will, as far as it can be done on this occasion, in reference to the establishment of a railroad and telegraph to connect the Atlantic and Pacific Oceans, for the benefit of our Union. That we deem the establishment of such road and telegraph to be an enterprise entirely worthy of the prompt, decisive and liberal action of the National Legislature. That it is emphatically called for by the national interests. That it belongs to, and is obligatory on Congress to take such immediate order on the measure as is consistent with the energy and power of this great nation.

Col. Benton, being then loudly called for, took the stand. He said he should occupy no time in dwelling upon the desirableness of such a road, for that he supposed to be universally conceded. He would simply read a few extracts from letters he had received on the subject from Col. Fremont, which contained information of some importance. He then read the following:

MONTEREY, (Cal.) June 27, 1849.

"I shall be anxious to receive the best information relative to your plan for a railroad—what the prospects are for its adoption, and towards what point of this country it will probably be directed.

"In conversing with Mr. Butler King and Gen. Persifer Smith a few days since, this road was a subject of general interest. I mentioned that the line explored in my last journey was admirably calculated for the road, passing the mountains between Arkansas and the Del Norte, with scarcely an inequality of profile, and with knowledge obtained since our disaster showed what would have been the character of its extension further west, to the Great Basin. A reference to the map will show you that this line crosses the valley of the Del Norte at the southern edge of the New Mexican settlements, a handsome and fertile country, whence a branch road might be thrown down the valley of the river and through the settlements of Santa Fee. The road would enter the basin at the southern end of the Mormon settlements, and cross by way of Humboldt river. About midway of that river's course, a large valley opens into it, and up this lies an excellent way to a low pass near the head of the lower Sacramento valley. Before reaching this pass, a way diverging to the north affords a very practicable valley road into Oregon, and, in my opinion, far the best by which you can reach that country.

"Immediately after this conversation, Gen. Smith determined upon a party to explore that part of the route which I have last described, with a view to report upon it at the ensuing session of congress. He afterwards called upon me to request that I would send him a written communication, to the same effect, in order that hereafter the credit of the suggestion might remain with me. It is not pleasant to see the work pass into other hands, but private means are inadequate to such undertakings here."

This is the account which Col. Fremont gave of the line of his last exploration. In letters which were previously written from the base of the Rocky

Mountain, from Bent's Fort, giving an account of his explorations that far, he says:

"We have met with very reasonable success, and some good results, in this first long step in our expedition. To avoid the danger of snow storms upon the more exposed Arkansas route, I followed the line of the southern Kansas, (the true Kansas river)—and so far added something to geography. For a distance of four hundred miles, our route led thro' a country affording abundant wood, game and grass. We find that the valley of the Kansas affords by far the most eligible approach to the mountains. The whole valley soil is of very superior quality, and the route very direct, (between 38 and 39 deg.) This line would afford continuous and good settlements, certainly for four hundred miles, and is, therefore, worthy of consideration in any plan of approach to the mountains."

Col. Benton proceeded to say that it was no part of the duty of that convention to settle or discuss the question of location. To induce Congress to make the road was the great object; practicability would be the first inquiry of Congress; and upon that point the labors of this convention should bear. Practicability could not be shown unless by showing a line: and this led to the necessity of considering localities, and finding a line on which a road could be built. In this point of view the extracts just read from Mr. Fremont's letters became vitally important. That young man had examined and fixed the locality and character of the South Pass—a name proper when given, but now become a misnomer.—In the year 1842, Oregon was our only possession on the Pacific coast at that time; and the objects of explorations then was a communication with the Columbia. The next year Mr. Fremont, in searching a new route west of the Rocky Mountains, fell upon the Great Basin, the Sierra Nevada, and California; and since that time his explorations in the Rocky Mountains have been south of the South Pass, and with the view to find practical communications further south. He had found, or rather he had examined and described many; for, like the S. Pass, they had all been discovered before; and in each of the three Parks, and at the head of the Arkansas, he found practicable passes. They were nearer the true line than the South Pass, and therefore preferable in point of locality to that pass; but he decided in favor of no one of them. There was a line further south still, which, from the beginning, occupied his thoughts, and that was at or about the head of the Rio Grande del Norte. He had no preference until he could explore that route, and that was the object of his last expedition—so disastrous to himself and his devoted comrades, but so rich in precious results to the country. The brief report of these great results was contained in the extracts of the letters which he had read; and they showed everything that the friends of this great highway of nations were in search of all the requisites for the great road which was required in our North America, from ocean to ocean. First, directness of course; for the line was between 38 and 39 degrees till it crossed the Rocky Mountains, then deflecting a little to the north, it entered the Great Basin, and touched the Mormon settlements, between 39 and 40—which, in that part, was about the straight line from St. Louis to the Bay of San Francisco. He said the straight line, in contradiction to the latitudinal line; and the difference between them from St. Louis to San Francisco would be about one degree in the middle—of course nothing at the ends. One great requisite of the road then was here found in the great point of directness of course; for, keeping between the same degrees of latitude, you follow the Kansas four hundred miles; you go on into the valley of the Upper Arkansas; and, still holding on your course, you enter the valley of the del Norte near the head of that river, where there is an easy pass; and after that by only a slight deflection to the north you get into the straight line. Mr. Fremont did not see this pass; the mistake of his guide, in the deep snows led him upon one of the most inaccessible heights of the Rocky Mountains; but that did not alter the fact. The pass was there—the same through which Roubidoux had taken loaded wagons—and which, information received after his disaster, proved to be a good one, with a good practicable line beyond it to the Great Basin.

Practicability, the indispensable requisite of the

road, was established on this line. The emphatic language of Mr. Fremont, his remark applying to the mountainous region which requires to be traversed, is that it presented scarcely an inequality of profile.

Another great requisite was adaptation of the country, which this line travels, to inhabitation and cultivation, and the means it presented for the construction and maintenance of the road. This requisite was fulfilled—wood, water, good soil were found along it—no less than 400 miles of such country along the Kansas—the valley of the upper Arkansas, as far used, the same—the valley of the Del Norte still the same; being, in Mr. Fremont's own language, "a handsome and fertile country."

Then the three great requisites for the road, practicability, directness of course, and adaptation to settlement are found upon this line.

Two other requisites were presented. California, though the jewel of our western possessions, was not the only possession which we held towards the setting sun. Oregon and N. Mexico were there, and must not be forgotten or neglected. We must have a road to them, if we mean to treat them as children of our family, and a branch road to each Mr. Fremont shows to be easy and natural, the way provided by the hand of nature, that for New Mexico leading down the valley of Del Norte from near the northern settlements to Santa Fe and El Paso—that for Oregon branching from the further side of the Great Basin, and on this side of the pass in the Sierra Nevada, through a valley leading to Oregon, and presenting in his opinion far the best way by which that territory (meaning the lower part of it of course) can be reached. Thus, all the requisites, natural and political, desirable for the great road to the Pacific ocean, are fulfilled upon this line.

Col. Benton then proceeded to examine and refute a statement made in a document published by a Committee appointed at the St. Louis Mass Meeting, to the effect that there was no practicable pass for such a road south of the South Pass, and that Mr. Fremont had so stated. This, Col. B. declared was an error. There were and are passes—Mr. Fremont had described them—at various places further south. Pulliam's fork of the north fork of the Platte—the three Parks—and the head of the Arkansas—all presented them: and Mr. Fremont had crossed them all and described them all. There was and is a pass from the head of the valley of the Del Norte leading to the Rio Compadre, a branch of the upper Colorado, and upon which, (the Rio Compadre) Mr. Joseph Roubidoux, well known in this city, had a trading post; and to which post loaded wagons have gone from Bent's Fort on the Arkansas through that pass. Mr. Fremont knew this.—All the men of the mountains knew it. It was a part of his plan from the beginning to examine that pass, and that was the object of his expedition last winter, and the sole object which could have induced him to explore a new route to California at such a season. He never told any body that there was no pass south of the South Pass, for he knew better—he had spent years in exploring several, had fixed their localities and published their descriptions, and made his great expedition last winter for the express purpose of fixing the locality, and describing the character, of the only remaining one which claimed his attention—the one by the head of the Del Norte.—He never said that the South Pass was the *only* route. He never even said it was the *preferable* route. Mr. Fremont is not the man to express an opinion before he forms it, nor to form it before he understands it. He must know all before he speaks—and upon that principle it was that he took his new route last winter, to examine the last route which belonged to the line of central communications; and the results of which briefly, but comprehensively and lucidly told, are in the extracts which have been read to you from his letters.

The south pass, though good in itself, has never met the approbation of Mr. Fremont for the road to California. It is too far north. He wanted a route three or four degrees further south; and has found it! and gives the country the benefit of it. General Persifer F. Smith has now sent a topographical officer to examine the only link in the chain which Mr. Fremont himself has not examined. That officer is to make his report in time to be laid before Congress at its ensuing session. All the remainder of the route, and all the country through which it passes,

has been examined by Fremont himself; so that all the information, and in authentic and official form, which is necessary to the action of Congress, will be ready for it at the approaching session; and the law may then be passed for the location of the road.

We do not diverge into discussions upon details: we do not pretend to locate a road. But a knowledge of details is necessary in order to be able to judge of the great points which must govern the question, practicability first, as an indispensable requisite—and all the other desirable requisites. Details embarrass all questions—impede wise discussion—and balk legislation. Congress should not undertake to locate the road—should only fix the governing points—and leave the rest to the engineers and the mathematics, under the obligation to connect the points by the nearest and best routes. This is what Congress should do, and for this everything will be ready at the ensuing session.

We have seen the new route under all its aspects of practicability, adaptation to settlement, directness of course, and facilities of construction and preservation. Another high requisite of a national road, is nationality; and that presents itself on this route. That is national which suits the greatest number of the nation; and such is the case here. It is central and national. It is between thirty eight and thirty nine degrees; these two parallels include the whole route from St. Louis to the Pass at the head of the Del Norte; include the Bay of San Francisco and Washington City; they cover the centre of the U. States; and from St. Louis, east, lines of roads built by the States—a line direct to the Atlantic—diverging lines to every commercial city on the Atlantic, the Lake and the Gulf frontiers—will reach and accommodate all the States east of the Mississippi river. The States will do this; Congress is only asked to bring this central trunk from the Bay of San Francisco to the west bank of the Mississippi at St. Louis. Water and iron—the steamboat and the steam car—will do the remainder; and from this great point, fleets of steamboats swimming every stream, and long lines of cars running every road, will carry the commerce of Asia through all the interior and to all the corners, and to the whole circumference of our wide confederacy. Nor is it to stop there. Europe will receive its supply of Asiatic goods through our America: and ocean steamers departing from our Atlantic coast, may reach not only the western cities of Europe, but run down the Mediterranean, up the Archipelago, and astonish Constantinople with Asiatic products coming west instead of east.

The San Francisco and St. Louis route, as shown to be practicable and preferable by the last exploration of Mr. Fremont, was the national route, demanded by every national consideration. It was territorially central; and that was a great recommendation. It was commercially central; and that was another. It was central to population; and that was still another recommendation. It would accommodate the greatest number of states and persons; and that was a crowning consideration in favor of its nationality. It could not pass through every state: then let it take the middle of the whole, and accommodate the greatest number.

Mr. Benton said he had some experience in road making in the vast region which lies to the West. Twenty-five years ago, "solitary and alone," he had moved a bill for a road from the frontier of Missouri to S. Fe. It was then considered one of the wildest of his "humbags;" but the bill was passed—the road laid out—and a rich commerce been going on upon it ever since. It was objected to as being an external road; but as that objection came from those who were against internal roads, was pleasantly received; and the bill passed by nearly three to one in the Senate, and without a division in the House of Representatives.

That road was the humble commencement of the great system which is to put us into communication with the Pacific Ocean. One of the arguments for it was the same—the interest of commerce, and the duty of the General Government to give interior, and overland commerce, the favor and protection which induces it to send fleets into every sea to foster and protect the commerce of the ocean. Great merchants and statesmen supported that bill upon that ground—among them Mr. Van Buren of New York, and Mr. Lloyd of Massachusetts—the latter being a merchant in that large sense which includes

the statesman—which has enabled some merchants of Great Britain, of Holland, of Italy, to revive the recollection of the "merchant princes" of Tyre and Sidon, and to become by their enlightened patriotism the political benefactors of the country and their commercial enterprise enriched. The little bill for the Santa Fe road found such in the Congress of the United States in the year 1825. The great bill for the American road to India, through the centre of our Union, will expect to find such in the Congress of 1850.

Discarding all sectional and all local considerations, Mr. B. was for a national road in character, as well as in name—national in its location, by being central—national in its construction, being made by the nation—national in its title, by belonging to the nation—national in its use, by being used by the people free of tax. A slight transit duty in the nature of a drawback, common to all countries and to be regulated by treaty, would bring from foreign commerce enough to put great revenue in the treasury after keeping the road in repair. The track of European commerce will quit the ocean route, on the establishment of the American road, just as suddenly as the commerce of the desert and the camel quit the land routes upon the discovery of the Cape of Good Hope. All the commerce of Europe with Asia will go through our country; the carriage of it enriching our citizens, while a transit duty will put money in the treasury, and the necessity for its use will put Europe under bonds to our America for its peaceful behaviour.

Nationality, he repeated, and with great emphasis, was his polar star in his labors upon that road; and if all national considerations brought it by the city of St. Louis, and through the heart of Missouri, it did not belong to any part of the Union to repine at the result or to oppose the road on that account.

Mr. B. spoke of the ardor of the American Character, its love of enterprise; its intelligence; and its irrepressible activity. He said it must have employment; and if it could not find a war, or some great object, worthy to engross its energies, it must fall upon a small one—even a *moros multicaulis* speculation; and the whole country go planting bushes, and counting fortunes at the rate of thousands of dollars for each opening bud. That activity—that restless spirit of enterprise—is now without occupation, and panting for employment. Give it the road! and a hundred thousand men will go upon it! and in seven years all will be finished!

Mr. Benton did not enter into considerations for constructing this great central road. It was foreign to his purpose to mention the great commercial political, military, and social reasons which recommended it. One only he was unable to repress. All felt that such a road would be a band of iron, hooping and binding the States together east and west, from the Atlantic to the Pacific: it would also be a cement of union north and south. The lateral and converging roads would bring together in the centre the inhabitants of the north and the south. They would meet in the great line which would go east from the Mississippi, and feel again, as their fathers did in the time of the revolution! feel that they were brothers, children of the same mother country, with a heart to love, and a hand to support each other.

Mr. Benton having concluded, Mr. Loughborough addressed the convention in reply to Mr. Benton, and stated that, as he had himself, at the desire of the committee of twenty-five, drawn up the article objected to by Col. Benton as contrary to the opinions of Mr. Fremont, he felt called upon to say a few words in its defence. Whatever facts relative to the Pacific railway had been subjected to the consideration of the convention, were facts so well authenticated as to be entirely beyond reasonable doubt. He mentioned his authorities, a number of persons who have had long experience in every portion of the route proposed by the committee of twenty five. If the speaker has made Mr. Fremont express other opinions than his own, he begged the convention to believe that it had been done inadvertently. He was not prepared at present to discuss the subject with Col. Benton, but he trusted at an early opportunity to be enabled to discuss it in all its bearings, to the satisfaction of the convention.

After the conclusion of Mr Loughborough's speech several resolutions were offered, but postponed.—The following, however, passed unanimously:

Resolved, That this convention does consider the prime object of its appointment and meeting to be, to elicit an expression of the public opinion and the public will, as far as it can be done on this occasion, in reference to the establishment of a railroad and telegraph to connect the commerce of the Atlantic and Pacific oceans for the benefit of our Union.—That we deem the establishment of such a road and telegraph to be an enterprise entirely worthy of the prompt, decisive and liberal action of the National Legislature. That it is emphatically called for by the national interests. That it belongs to, and is obligatory on Congress, to take such immediate order on this measure as is consistent with the energy and power of this great nation.

On motion, the convention adjourned (half past twelve o'clock) to meet again at the east front of the Court House, half past three o'clock P. M.

AFTERNOON SESSION.

After some unimportant matters were disposed of, it was moved and seconded, that a member of the convention be appointed from each State represented, to draft a memorial to Congress explaining the objects and views of this convention.

A resolution was then offered by Judge Birch, of Missouri, and read by the secretary, as follows:

Resolved, That the present state of geographical and topographical information concurs with the statistics of population and wealth in donating the best of public territory along on near the 40th parallel of north latitude as the starting point, and the general course of emigrant route to the southern pass in the Rocky mountains, as the line of the projected national railways to the Pacific ocean.

Mr. Lathrop, of Louisiana, moved that the resolution be laid on the table. Judge Birch explained that he did not ask the convention to pass this resolution, but to refer it to the committee on resolutions and spoke at considerable length, and begged the gentleman of Louisiana to withdraw his motion—which was done.

Gov. King then arose to address the convention, when he was called to order amid much confusion, upon the ground that he was a Missouri delegate, but not in the gallery; but the governor being an invited guest, it was declared that he had a right to be heard from any part of the house. The governor then spoke at some length in opposition to Judge Birch's resolution, and was followed by Judge Williams of Iowa, in an excellent speech, which was delivered in a very happy, off-hand manner, amid thunders of applause.

Mr. Lathrop renewed his motion to lay the resolution on the table.

The chair announced that he had selected the committee on resolutions, to consist of three delegates from each State represented.

THIRD DAY—MONDAY.

The morning session was occupied in the discussion of various matters, principally resolutions which were referred by the convention to the committee on resolutions. A resolution was offered that Congress should immediately commence this work beyond the limits of any state, which called forth a speech from Hon. O. H. Smith, of Indiana, in opposition to the "clause which fixed the commencement of the work at a point outside the limits of the State. None of us want a road that shall terminate in the wilderness. The work about to be undertaken will prove an Herculean task. No single State, no company of speculators would broach it with any rational hope of success. It must, then be a national work; and, in order to make it national, the interest of every State must be enlisted in its favor.—And further, how can we collect toll, and how can

we properly assume control of any kind whatever over a road terminating out of our States? The doctrine that the general government has no right to make a road through a State, is incorrect, and should not be allowed to interfere between us and our interests. The speaker proposed to explain his views on other branches of the subject. In relation to the establishment of a line, he begged to say emphatically that it ought to be established immediately. "Do not," said he, "leave the selection of the route to the wisdom of Congress." After all, our Congress is composed of Congressmen; and these Congressmen, alas! had been mere ordinary men before they were elected. That office did not always foster wisdom, was a fact established beyond doubt. In relation to the Railway route, the speaker said that our government would of course establish only a single line. Whether that would be the Whitney line, the Central line, or the Memphis line, he did not pretend to determine, but, to his mind, the central route certainly appeared the most feasible and the best suited. He begged to add that this was not his opinion only, but the opinion of the citizens of Ohio, Indiana and Illinois. The impression that either of the States was in any degree opposed to the termination of the route at St. Louis, was a most erroneous one. They looked upon it as the proper the natural, the only practicable terminus."

After the conclusion of this speech Mr. Douglass resigned the chair for the purpose of participating in the debates of the Convention.

AFTERNOON SESSION.

The convention met at three o'clock. After some unimportant preliminary proceedings, the secretary, at the instruction of the president, read the following report of the committee on resolutions:

Resolved, That this convention is in its spirit and objects strictly national, having no party, no section, no local interests to serve or promote, but having at heart the interests of the whole country.

Resolved, That it is the duty of the Congress of the United States to make immediate provision for the construction of a great trunk railroad to the Pacific ocean in California, with a branch road to Oregon, from such point in the Mississippi valley, or on the frontier of the states, as may be found, from examination and surveys, to be most eligible and convenient with reference to the existing and prospective state of the country, and the population and commerce of the whole Union; and that it should be diligently prosecuted by the federal government.

Resolved, That the various lines of railway, now either complete or under process of construction, from Savannah, Richmond, Charleston, Baltimore, Philadelphia, New York and Boston, tending to and connecting with the Mississippi valley, are only parts of the great whole, which the general government is asked to consummate by the Mississippi and Pacific railway; and that these eastern connections now being prepared for it, by uniting all interests, guarantee the perfect nationality of this work.

Resolved, That, as an important means, a necessary preliminary to the construction of such railroad, it is the first duty of the American Congress, immediately upon its assembling together, to make provision for the establishment of military posts from the western confines of our western states to the Pacific ocean; that these posts should be established numerously, in all proper places, not far distant from each other; and that civilised productive settlements should be encouraged around them, by liberal sales or grants of the public lands; by extending ample protection to the settlers, and to the transport of their stores, merchandise, etc, so that, by these means, full opportunities may be afforded to our topographical engineers for the immediate reconnaissance and survey of our vast possessions, reaching to the Pacific, and one or more safe practicable roads, with facilities of travel, immediately formed for our citizens, across our own territories, from the Atlantic to the Pacific shores.

Resolved, That the Congress of the United States be memorialised to construct, or authorise the con-

struction of a national line of telegraph along the route which may be determined upon by national authority, for the great railway to the Pacific.

Resolved, That a committee of five be appointed by the president of this convention, to report and publish an address to the people of the United States, urging their co-operation in procuring such action on the part of Congress as may be necessary to carry out the views of this convention.

Hon. R. W. Thompson, of Indiana, then addressed the Convention, examining at some length the routes upon which it was proposed the road should be located. He contended that it was the duty of the General Government—and he strongly emphasized the word *duty*—to build a Railroad which should connect the waters of the Pacific Ocean with the waters of the Valley of the Mississippi. He contended that such Railroad should be a central and a national one; that in order to make it central, three lateral branches should be constructed from its eastern terminus—one reach Memphis, another to reach Chicago, and another reach St. Louis. He contended that the Convention should, by their action, express their preference for such a central road, and then leave to Congress the performance of their duty; and if they did not make such a road, to hold them strictly responsible at the bar of public opinion. If the Convention resolved upon this great project, and presented some definite action, there was no danger to be apprehended from Congress; public men always loved the people too well not to reflect their will, and conciliate all sections of the Union. After dilating, in an eloquent manner, upon the practicability of the measure, and its vast importance to the world, he concluded by submitting the following resolutions, in lieu of those reported by the Committee.

1. Resolved, That, in the opinion of this convention, it is the duty of the general government to provide, at an early period, for the construction of a central and national railroad from the valley of the Mississippi river to the Pacific ocean.

2. Resolved, That, in the opinion of this convention, a grand trunk railroad, with branches to Memphis, St. Louis and Chicago, would be such a central and national one.

3. Resolved, That a committee of fifty, (Mr. Thompson, of Indiana, acting as chairman,) be appointed to communicate to the convention to be held at Memphis, the foregoing resolutions, and to request the concurrence of said convention therein.

The secretary then read an invitation extended by the delegates from Tennessee, in the name of their fellow citizens, to the members of the St. Louis convention to attend the convention shortly to be held at Memphis. It was moved that the chairman appoint fifty delegates from Missouri to attend the Memphis convention. After several eloquent speeches, expressive of approval of the resolutions last passed on the subject of the railway, the convention adjourned till to-morrow at 9 o'clock A. M.

LAST SESSION.

Memphis Delegates, Philadelphia Convention, etc., etc.

At 9 o'clock in the morning, the convention met pursuant to adjournment. Judge Samuel Treat, of Missouri, then arose, and having read the following resolutions, offered by the committee on resolutions and afterwards excluded by the amendments which passed, trusted that they would be adopted:

Resolved, That as an important means, as necessary and preliminary to the construction of such railroads, it is the first duty of the American Congress, immediately on its assembling together, to make provisions for the establishment of military posts from the western confines of the western states to the Pacific ocean; that these posts should be established numerously in all proper places, not far distant from each other, and that civilised and productive settlements should be encouraged around them, by liberal sales and grants of public lands, and by ample protection to the settlers.

Resolved, That the Congress of the United States be memorialised to construct, or authorise the construction of a national line of telegraph along the

line which may be determined upon by national authority for the great railway to the Pacific. Said line of telegraph to be constructed in connection with the military posts named in the preceding resolution, and to be pushed to completion as early as practicable.

After the transaction of some other unimportant business, the convention adjourned to meet in Philadelphia in April next.

Pennsylvania.

Central Railroad.—The following bird's eye view of the present condition and prospects of this work is presented in a letter from the Associate Engineer, under date of 20th ult., addressed to the President of the Pennsylvania and Ohio Railroad Co.

"You are aware that the Pennsylvania railroad has been opened to the public between Harrisburg and Lewistown, a distance of sixty miles, which is not sufficient to command a large share of the western travel. On this section is the great bridge over the Susquehanna river, which alone cost \$200,000, but notwithstanding these drawbacks, the road now earns equal to five per cent. per annum on its cost.

Above Lewistown the road has been delayed by the sickness which has prevailed to an unusual extent this year among the laborers on the Juniata. The heaviest sections, however, are done, including the deep rock cut at Newton Hamilton, and the tunnel on the Little Juniata, and it is confidently anticipated that a further section will be opened to Waynesburg early in the winter; to Huntingdon in time for next spring's business; and to Holidaysburg by next summer. This will bring us, by a connection with the Portage, within seventy miles of Pittsburg by turnpike, and 103 miles by canal.

The part of the western division just put under contract, will extend the road twenty six miles further westward, and beyond all the mountain ranges of western Pennsylvania. Of this distance, fourteen miles of the heaviest work has been assigned to able and respectable contractors, to be commenced immediately, and completed April 1st, 1851. The remainder is light work, and will be commenced in the spring, together with an additional section of similar character in connection with it, which will bring us to the Southern Turnpike, at a point about forty miles from Pittsburg, all of which will be pushed so as to be completed simultaneously by the time above named.

I have just organised a corps to make the final revisions and improvements of the location between the Loyalhanna and Pittsburg, with a view to putting the heaviest sections of that portion of our line under contract, as the Board hope to have the means at their command for this purpose next spring. The lighter sections will be delayed until the heavy work has advanced so far as to permit the whole to be simultaneously completed, which I think may be done by the spring of 1852. In the course of that year, I fully expect that our board will have the pleasure of inviting the directors of the Ohio and Pennsylvania railroad company to ride in our cars from Pittsburg to Philadelphia, and I hope that the great work so happily commenced under your auspices, will be in such a state of forwardness that you will be able to reciprocate the invitation, and carry them on your iron river far into the fertile regions of central and western Ohio."

In connection with the foregoing subject, we find the following article in the Pittsburg Gazette of the 24th ult.

"We have been favored with the perusal of a correspondence of the President of the Pennsylvania railroad company with Messrs. McCandless and

McClure, the legal advisers and agents of the company in this city, from which we learn that Allegheny county bonds, to the amount of \$200,000, have been forwarded to the directors, and \$100,000 more will soon follow. The proceeds of these bonds will be spent in the purchase of railroad iron, 4,000 tons of which have been already negotiated for the western division.

We learn, also, from the letters of the President, that the board is anxious to put the whole western division under contract at as early a day as possible, and are only waiting now for the means. The remainder of the Allegheny county bonds will be devoted to this purpose, and the directors confidently hope to receive some additional aid from the capitalists of Pittsburg, to assist in the early completion of this great work.

AMERICAN RAILROAD JOURNAL.

Saturday, November 3, 1849.

Hudson River Railroad.

Certain parts of the permanent way of the Hudson River Railroad strike us as being of a very faulty construction. The cross-sleepers are adzed down from the ends towards the middle, the middle being the *weakest point*, although the load acting from the ends with the energy of a lever, requires that the middle shall be the *strongest point*. The object of hollowing out the cross-sleepers is, we presume, to obtain sufficient depth for the pavement of the streets through which these portions of the line pass; but surely, an educated invention can meet this condition by a less objectionable system of permanent way. The system adopted involves not only a great waste of labor and material, but actually runs counter to a principle of construction so plain as to be amongst even the *instincts* of every practical man.

The rails, too, rest on cast iron *seats*—we cannot call them *chairs*—of very questionable utility; and are bolted through the seats to the knob ends of the hollowed sleepers, the object of the knobs on the ends of the sleepers being, it is supposed, to raise the rail to the proper level. The joints of the rails are treated in precisely the same way as the intermediate parts—except, indeed, that a strip of sheet iron of the scantling of ordinary iron hoop is made to overlap a little of the lower web of the rail. This part of the line is probably not intended for locomotives; but the construction used is quite objectionable in any case.

A better system of permanent way, and one equally suited to the circumstances of the case, might be easily substituted for the existing one. For instance, may not the sleeper be laid down *whole* to a depth sufficient for the purposes of paving; and if longitudinal bearers be considered objectionable, the level of the rail be attained by inserting cleats of hard wood between the rail and the sleeper? We would, however, recommend that the sleepers be laid down *whole* to the necessary depth; and that the rail be bolted to a longitudinal bearer of timber crossing the ends of the cross-sleepers. This simple arrangement will not only make the rail much stronger, but also save the material and the labor lost in adzing down the sleeper, and also the cost of the useless castings with which the rail is bolstered up; and by giving the rail a continuous support, making it much stiffer, and by placing it on a slightly elastic material, making the motion much smoother, diminish the draught and increase the duration.

While on the subject of this railroad, we would suggest the further necessity of an examination in-

to the fitness of certain curves on the road for the high velocities with which it is intended to be worked; and to hint at a particular case suggest the positive necessity of altering an S curve some ten miles from the terminus.

We throw out these hints under a sense of duty to the public; and as they refer to particulars that, in the mass of details occupying the attention of the gentlemen conducting the work, may have escaped their notice, we trust they will be accepted in the candid spirit which suggests them.

Pacific Railroad—Exploration of the Route.

In a recent number of the Journal I showed cause why the South Pass and St. Louis should be considered as fixed points on a *national* railroad from the Mississippi to the Pacific. These points I attempted to establish satisfactorily from premises strictly abstract; and assumed no other fact in connection with the route than the simple one of the practicability of the South Pass for railroad purposes. The absence of any *precise* information as to the country lying between these two points led me to conclude that all the established facts of the case go simply to fix these two points as the basis of an engineering exploration; and now that men are beginning to fall into the views put forward in this particular by the Journal, I beg leave to go further in suggesting a system for this exploration.

Barometric sections are at best but rough approximations and the ordinary exploration plans are even still more loose, and both are besides so much labor lost, being quite useless for the purposes of the more precise survey, that in the case in hand must be undertaken subsequently. These explorations furnish *no evidence for any engineering purpose*. I therefore take leave to recommend that a trigonometrical survey be substituted for the ordinary system employed in exploring the country between the Mississippi and the Pacific. Adopting the arc of a great circle—the air line—from St. Louis to the South Pass as the basis of operations, and fixing the average maximum limit of deviation on either side at fifty miles, the whole belt of country should be *poled out* into a regular system of triangulation. The best method of arranging the triangles would appear to be this: having from a rough chaining staked out the centre line into five mile lengths, two transverse lines intersecting this at each of these mile intervals should be laid off on both sides at angles of about 60 degrees. These transverse lines followed out to the limit of the survey will break the whole belt into a series of triangles very nearly equilateral—the equilateral being the best shape for carrying out an extensive system of trigonometrical survey. When all the points of intersection have been established by signal poles in the usual way, the whole should be broken into sections of say 100 miles square, and a party of surveyors placed upon each under the superintendence of an engineer, who, stationed at the centre of his district, should check the observations of his assistants by working up the triangles on the ground. A base line may be measured at almost any point along the survey; but if the country should be very irregular, or if it be thought desirable to carry one bare line through the whole survey, a 24-inch theodolite must be employed to work out a system of primary triangulation; but the unbroken character of the country for a great part of the line of survey while lessening the efficiency of a 24-inch theodolite, will also prevent the necessity of using it by furnishing facilities at several points for the establishment of base lines.

Ten-inch theodolites should be employed for the

observations; and the centres of each station being well defined, should be made permanent points for future reference. The altitude of each point should be established in the usual way by means of vertical angles; and these being taken from each station would give several results, the mean of which would be a most reliable level. So too with each point on the plan: it would be fixed from at least four other points; and therefore be almost mathematically correct. There would be no confusion in determining each point coming within the field of the theodolite, seeing that the whole may be distinguished by reference to a diagram showing approximately the several stations of the district.

A map compiled from the results of these observations will be a highly useful plan for even nice purposes; and the points of observation being available for subsequent reference, the details of any part may be filled in with equal accuracy wherever such may become necessary. The advantage to science of connecting two points on the earth's surface so distant asunder as the limits of this survey, and by such accurate calculation, are too obvious to require any remark. Besides this, such a map as I speak of will furnish a good profile of the whole belt of country showing some eight thousand altitudes even within the limits assumed; though as the peculiarity of certain parts may require a wider range and more detailed survey the points of altitude on the plan will very likely amount to even ten thousand. The force of this suggestion will be appreciated most fully by practical engineer, and will be felt—if not by every one—by at all events, all the scientific men in the country.

M. B. H.

Alabama.

Selma and Tennessee Railroad.—In our paper of the 20th ult. we gave a brief account of the meeting recently held at Selma for the purpose of promoting the above work, and enumerated some of the advantages to be gained to this State by its construction, not only as opening new facilities for the transportation of such agricultural articles as now constitute her chief products, but as making available her great mineral wealth, which, for the want of suitable means by which to reach a market, remains comparatively untouched. Since then, we have read with great satisfaction the speech of P. Phillips, Esq., of Mobile, President of the Selma Convention, in which the importance of this road, as a means of developing the resources of the State, by promoting a greater variety of industrial pursuits, is discussed with a freedom and ability which would be creditable to any man in the country. What pleased us particularly, was the fact that the speaker did not look at this subject through the medium of the ideas of a particular school of politics, but through the better one of common sense, which, independent of theory or tradition, adopts those means and that policy, best adapted to secure the end in view.

The economical ideas of every people will in the end, receive their character from the policy that constitutes their true interests. So long as cotton planting was the most profitable pursuit at the south, nearly every other branch of industry was neglected, and their encouragement was looked upon with distrust, from a fear that they would conflict with the profits of cotton growing. The south then believed that her best interests lay in the encouragement of this branch of industry. She now finds that she can produce more cotton than sell to profit—that capital in its production is hardly remunerative, and that the growth of this plant is fast impoverishing her soil, so that this State

can no longer compete with the virgin lands of our newly acquired territories. This change in her condition is rapidly changing her former views.—She now sees that cotton planting is not so profitable as commercial or manufacturing pursuits, and finding within herself all the elements of success in both of these, she is fast turning her attention to the development of these comparatively untouched sources of wealth; and those men who, as pioneers in this movement, are putting into operation cotton mills, furnaces, or similar establishments, or who are improving their rivers and constructing railroads for the purpose of opening cheap access to a market, and illustrating by their success, the capacity of this section of the country for these pursuits, are teaching a more valuable lesson than can be found in all the schools of politics, since the organization of society. The richest country in the world owes its wealth to the abundance of its iron and coal, and the people of Alabama are beginning to ask themselves why, by the working of the iron of that State, they cannot produce similar results.

In connection with what we have said, we give the following extracts from the speech alluded to:—

"The immediate effect of this great work will be to open up new sources of industry. No one who has been attentive to the cotton culture as pursued in the southwestern states but recognizes its exhausting character. The opinion is generally prevalent among our cotton planters that it is cheaper to purchase new lands than to manure old ones—and hence like the locust, they settle only to destroy. It then becomes necessary to fix this population, and to do this we must create facilities for transportation, and by the introduction of the comforts and conveniences of life convert the temporary settlements of Alabama into homesteads, whose permanency will draw around them increased improvement with increased affection.

The diversion of a portion of labor now employed in the culture of cotton will not only influence favorably its value, but by introducing new staples the state would be in a great degree relieved from the disastrous consequences which now result from the frequent fluctuations in its price. Depending upon this single staple, it becomes the great regulator of values, and the whole business of the country and all its contracts are subjected to change and uncertainty produced by causes beyond control, and which no foresight can anticipate.

I confess then, that much of my preferences for the Selma route arises from its embracing so large a section of the state, rich in inexhaustible beds of iron, coal, limestone and marble, and though cotton plays as conspicuous a part in the commerce of the world, in point of mere money value it is inferior to many of the subordinate productions of our country; and I feel confidence in declaring that the day is coming, and not very distant, when even in Alabama, more wealth will be dug out of her bowels than are now gathered from her bosom.

Not only does she possess this vast wealth, but what is of still more importance, she has superior advantages of location. The distinguished Lyell, who lately visited this country principally to acquire geological information, and whose scientific attainments have recently won for him a knighthood, describing this region says:—"It forms a southern prolongation of the great Appalachian coal field with which I was acquainted when I completed my map published in 1845, of the geology of North America. Its geographical situation is peculiarly interesting, for being situated in latitude 33 d. 10m. north, it constitutes at present the extreme southern limit to which the ancient carboniferous vegetation has been traced in the northern hemisphere whether on the east or west side of the Atlantic."

The extent of these coal fields is described by Professor Brumby as being 80 miles long from north to south, and ten to thirty wide. They not only constitute the extreme southern deposits, but construct this road, and you bring at once large portions of it within 40 hours of the Gulf of Mexico!

Those who know the value of this article and remember that it is the foundation of manufacturing

prosperity, and that it is rapidly occupying the same relation to commerce—will at once appreciate the magnitude of the interests here involved.

Speaking of the effects of the coal production upon the general prosperity of a country, McCullough says: "Our coal mines are the principal source and foundation of our manufacturing and commercial prosperity: and no nation, however favorably in other respects not plentifully supplied with this mineral need hope to rival those that are in most branches of manufacturing industry. To what is the astonishing increase of Glasgow, Manchester, Birmingham, Leeds, Sheffield, &c., and the comparatively stationary or declining state of Canterbury, Winchester, Salisbury and other towns in the south of England to be ascribed? The abundance of coal in the north, and its scarcity and consequent high price in the south, is the real cause of this striking discrepancy. Our coal mines have conferred a thousand times more real advantage on us than we have derived from the conquest of the Mogul Empire, or than we should have reaped from the dominions of Mexico and Peru."

It is evident then that our people with cheap transportation (already owning the cheapest labor in the world) may command the trade of the Gulf in coal, and enter into competition with other states under most favorable advantages for every thing their soil is capable of producing.

The coal fields are more accessible to the Gulf of Mexico than any other in the south or west, and their importance to the commerce of this great inland sea cannot be estimated. Every person who has paid any attention to the subject must feel convinced that steamships must soon supplant to a great extent the use of sailing vessels. These coal fields must therefore furnish the motive power to this immense commerce which will soon receive a vast accession from the channels of communication which will be opened across the Isthmus of Panama.—In relation to this Mr. Phillips speaks as follows:

Much has been said in this discussion of the newly developed wealth of California and the vast commerce of the Pacific in reference to the channels of trade. Gentlemen have risen above prose in their eloquent descriptions. But though they indulge in 'thoughts that breathe and words that burn,' they could not paint too strongly the gorgeous spectacle we are soon to behold. New Orleans and Mobile must soon become the great entrepôts for the commerce passing from the Pacific to the east.

Of all the practicable routes now proposed that by Tehuantepec is said to be the best, being nearer by 1400 miles than the Panama, and 1000 miles nearer than the Nicaragua routes, and possesses all the qualifications necessary for the construction of a road or canal, with good harbors at the termini. If this be adopted, New Orleans and Mobile will be by sailing distance only 950 miles to the eastern terminus, and more than 1000 miles nearer than most of the ports on the Atlantic.

The width of the Isthmus, as given by Moro, is 135 miles. Here the river Goatzaco alcos empties into the gulf, according to the account of Balbi, an experienced navigator, of more than 100 miles with an excellent harbor at its mouth. Descending the table land of Tarifa to the Pacific, although the conveniences of that point do not equal those in the gulf, we have a very general concurrence among scientific men that at a moderate cost all the difficulties may be obviated, and an harbor established equal to all commercial wants.

It is very evident that much the largest portion of this immense commerce will be carried on by means of steam vessels, and they must 'coal' at some point in the gulf; and what point so suitable as the harbor of Mobile?

He then gives some facts relative to the gradual increase of the depth of water in the harbor of Mobile, which we give as follows:

The coast survey conducted by the federal government, has recently given to the public in the most authentic form a knowledge of the true importance of Mobile harbor. In a communication from A. D. Bache, the distinguished superintendent of that work he states,

"That the depth of water which can be carried over the bar at the entrance of Mobile bay at mean low water is 20½ feet, mean rise and fall of tide one foot.

"The channel is perfectly easy, one course, N. 19° W. true going through with one or two casts on the ridge of shoalest water.

"The depth of water at the anchorage of the fleet of merchant vessels in the bay is 3½ fathoms. There is perfectly secure anchorage in any winds for large vessels off the west end of Mobile point in from 8 to 10 fathoms water, and distant from the shore from one to one tenth of a mile.

"In 1832 the greatest depth which could be taken over the bar was 17 feet. It 1841 it was 19 feet and in 1847 it was 20½ feet, each at mean low water."

He thus concludes: "From these facts it appears that the (neighboring) islands have been on the increase since 1832, while the bar itself connected with them has passed gradually seaward, deepening as it advanced."

In addition to the business furnished by the transportation of the agricultural productions of that portion of Alabama which now find their way to Mobile, the following statistics are from the business to be expected from those sections of the country which now seek other markets.

But the utility of the road does not stop here—crossing the Coosa in Talladega and meeting it again at Gadsden or Will's creek, it will afford a cheap and easy transportation for the produce which is now wagoned at a great expense from the counties of Talladega, Benton and Cherokee to Wetumpka, over rugged roads, the difficulties of which were graphically described by a delegate from the county first named, who said that the wrecks of their wagons and the bones of their horses strewn along the road, could furnish the fires and manure the fields of all Coosa.

It will bring down the Coosa, which is navigable from this point to Rome in Georgia, the trade which now goes up stream to seek a market on the Atlantic.

Reaching from hence to Gunter's Landing, the road will at once draw to it the trade of the counties lying north and south of the Tennessee river in this State, as also the southern and southeastern counties of the State of Tennessee.

From Decatur, which lies 50 miles to the west of Gunter's Landing, to Chattanooga 160 miles, the Tennessee river is navigable for a large portion of the year, and this section of country is said to produce 60,000 bales of cotton, to which add 20,000 made upon the Elk, which empties into the Tennessee near Decatur, at the point where the obstruction begins.

The counties which lie west and below the shoals would speedily complete their improvement to Gunter's, and would add 50,000 bales more. Thus we have 130,000 bales, nearly all of which now goes on a journey of over 1500 miles, to New Orleans.

To appreciate the value of the contemplated road to the country, its chances for profitable business, we should look to the charges of transportation by the various routes now used by the people of that section of the State.

The counties of Lauderdale, Limestone, Madison and Jackson, lying on the north of the Tennessee river, contain a population of 80,000, and Franklin, Morgan, Lawrence and Marshall, on the south side of it, about 50,000. Gunter's Landing, which is 55 miles from the northeast corner of the State, is a convenient and nearly a central point, whether you regard population or production.

Assuming then the amount of 100,000 bales of Alabama cottons, sent by Chandler's line from Decatur at \$1 10 per 100 lbs.—

\$5 50 per bale 500 lbs.....\$550,000

Sent by the Tennessee to New Orleans at

\$3 per bale..... 300,000

Sent by the railroad to Selma, and thence to

Mobile at \$1 75 per bale..... 175,000

If we suppose that the counties of Cherokee, Benton, Talladega, etc, which would make Gadsden where the road crosses the Coosa their shipping port, would furnish for exportation 30,000 bales.

The cost by the Coosa company would be

\$4 12½ per bale.....\$123,000

On the Selma road..... 52,000

The Selma route compared with Chandler's line, on 100,000 bales saves..... 375,000
 Compared with the Tennessee route..... 125,000
 And on 30,000 bales at Godsdon, as compared with the Coosa river company..... 71,260

Rating the up freights at one-half of the amount of the down freight, and making a proportional scale of charges, and the amount of freight saved, constitutes alone sufficient inducements to undertake this work. Besides the difference in freight in regard to New Orleans, there is the heavy insurance and the long time occupied in reaching the market.

Take these calculations, which do not pretend to strict accuracy, and regard them only as approximations to the truth, and it will be found the people of North Alabama, by the construction of this road, would in a few years save in time, insurance and freight an amount equal to the whole cost of its construction.

But we go a step farther, and assert that, regarding the work as a mere investment for money, it would prove profitable to undertake it. In this view the interest of the road extends beyond our state boundary.

From Gunter's Landing to Chattanooga, a distance of 100 miles, the Tennessee is navigable for steamboats of heavy burthen 7 or 8 months and for boats of light draft all the year.

From Chattanooga to Knoxville on the Holsten, (an eastern branch of the Tennessee) there is a navigation of 200 miles more, six months in the year for large boats.

For 250 miles above Knoxville, the Holsten is still navigable for barges which descend the river carrying produce to that town.

From the point where the road will recross the Coosa, the river is navigable at all seasons to Rome, in Georgia, 150 miles.

These statements would fully justify the expectation that large freights would be received both from Tennessee and Georgia; and when we consider that the great Virginia and Maryland improvements all tend in this direction, it is only to anticipate the work of a few years to say that the link would soon be wrought which will connect them.—This will be the great overland route from southwest to northeast, the shortest which could be established between New Orleans and Boston, and the income from mail service and the great travel will swell the profits of the enterprise.

Our limits permit us to give only a portion of the speech of Mr. Phillips. Good sense characterizes the whole of it, and it contains much valuable statistical information. If its spirit is not indicative of the feeling already prevalent in this State, it is so of what we may soon expect to see. Every road she builds, instead of exhausting her means, will furnish additional means to build the next, by making available her resources, which are now worthless. The people of this State seem fully to appreciate the importance of railways, which is the next step to prompt and vigorous action. If a person were to examine a map of the United States for the purpose of delineating a system of railways adapted to the wants of the whole country, he would feel that his system would not be perfect, unless it was connected by a great arm with the Gulf of Mexico, through which the tropical products of the Gulf could be distributed over other parts of this great country, and those of the north could be received in return. The two great lines diverging from Mobile in the northwest and northeast directions meet this want fully; and as they run in the direction of the trade of the country, in addition to all the advantages they could confer, this fact must secure to them a profitable business.

British Association.

On the Manufacture of the Finer Irons and Steels, as applied to Gun Barrels, Swords, and Railway Axles. By Mr. W. Greener, of Birmingham.

No manufacture has tended more to advance the improvement of the finer qualities of Irons than that of gun-barrels, which has proceeded from the old stub twist barrel of former days to the laminated steel of

the present time, and has been attended with the advantages of increased security and greater projectile power of the gun. It might be naturally inquired why the principle, if so advantageous, has not been applied to other manufactures where even greater security to life and limb is required than in a gun barrel. The first innovation on the old principle of manufacturing gun-barrels, or that of making them entirely from old horse-nail stubs, is due to the late Mr. Adams, of Wednesbury, who twenty years ago introduced what is yet termed Damascus iron, which is constructed of alternate layers of steel and iron, faggoted, drawn down into rods, and twisted; and when welded into barrels, forms the beautiful Damascus barrel. The success of this experiment, not only in point of beauty but strength, was so great as to be under-estimated at an increase of 50 per cent. compared with the strength of stub-twist iron.

The next improvement was to blend more intimately steel with the horse-nail stubs, in the proportion of one to two of the latter. This was effected by cutting scrap-steel into pieces, assimilating with the stubs very carefully, cleaning them, and then welding into a bloom, and rolling. The fibrous system seemed in this case to be more perfect, for though possessing less steel in its composition, yet it was quite equal in tenacity. The difficulty in obtaining old stubs of quality sufficiently good, arising from deterioration in the original iron, has rendered the manufacture of this variety nearly obsolete, or, in cases where it is yet produced, the quality is so inferior as scarcely to rank third in quality.

The next and most important improvement in metals is the manufacture of the gun-barrels from scrap steel entirely, and for this purpose old coach springs are generally in request. By clipping these into pieces, perfectly cleansing them, and then welding in an air-furnace, a metal is produced which surpasses in tenacity, tenacity, and density, any fibrous metal before produced. The tenacity of it when subjected to tension in a chain testing machine is as 8 to 2½ over that of the old stub-twist mixture. The perfect safety of barrels produced from it is astonishing. No gunpowder yet tried has power to burst them when properly manufactured.

The progressive value attached to these various metals has induced Mr. Greener to try experiments on a more extended scale. To effect this he takes ingots of cast steel, from the mildest made to No. 3 in the scale of carbonization; these after being rolled into flat bars, are to be clipped into small pieces, intimately mixed, and welded, as before in the air furnace; drawn down in the rolls, refagotted, again drawn down, and then converted into gun barrels, either with or without spirally twisting them to form the Damascus figure. Barrels made from this (which he terms laminated steel) are in reality safe. To ascertain this, breeches were screwed into both ends of a gun barrel more than ordinarily light; eight drachms of gunpowder (or three ordinary charges) were then introduced; the breech was screwed in again, and the powder fired through an orifice the size usually found in gun nipples. The density and tenacity of the metal are sufficiently great effectually to resist the enormous force of this great charge of powder, the exploding fluid passing through the nipple like steam from a safety valve. The principle here developed is the perfection of the fibrous system with increased density of metal. The dissimilar carbonization of the metals forms dissimilar fibers when thus enormously extended, with a complete absence of any crystalline structure in the metal,—the existence of which in any material, either gun barrel or any other manufacture which become subject to violent concussions, explosions, or blows, may safely be set down as of the negative kind.

To be Continued.

Illinois.

The Galena and Chicago Railroad is progressing steadily forward; and will be this fall completed to Fox River, over 40 miles from the lakes. When it is considered that, but ten or twelve years ago, there were no white inhabitants living west of Chicago, and this work has progressed by corporate enterprise, without one dollar of appropriation by either State or National Government, and is doing a good business, it speaks volumes in favor of the intelligence, science and judicious economy which exists in this infant settlement.—Chicago Com. Adv.

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

- 1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
- 1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
- 1 Brick, slate roof, engine and dry house, 30 by 40.
- 1 Lumber house.
- 2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
- 1 Barn, 18 by 28 feet.
- 1 Wood dwelling house, 21 by 28 feet.
- 1 Brick block, six tenements, two stories.
- A number of building lots.

Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several planing and sawing machines, turning lathes, boring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of \$200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to

J. G. W. TRUMBALL, } Trustees
 WALTER LESTER. }

October 24, 1849.

To Railroad Companies, etc.



The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Switches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIEBRICH,
 46 South 8th St., Philadelphia.

November 3, 1849.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly on hand and for sale by

KENNEDY & GELSTON,
 54 Pine St., New York.

October 27, 1849.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
 No. 54 Pine St., New York.

May 12, 1849.

Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers,
 No. 85 Liberty St.
 New York.

And in the principal cities and towns in the U. States.

The Premium of the AMERICAN INSTITUTE was awarded to the Etna Safety Fuse at the late Fair held in this city.

November 3, 1849.

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To Proprietors of IRON FOUNDRIES.

FINE Ground Sea Coal Foundry Facing to mix with moulding sand, causing the sand to peel off the castings easily; Charcoal Blacking; Lehigh Blacking; and Soapstone Dust; also Black Lead Dust for facing very nice work, always on hand and for sale by

G. O. ROBERTSON,
 303 West 17th St., New York.

November 3, 1849.

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STATE OF NEW YORK.—SECRETARY'S OFFICE, Albany, July 14, 1849.—To the Sheriff of the city and county of New York.—Sir: Notice is hereby given, that at the General Election, to be held in this State on the Tuesday succeeding the first Monday of November next, the following officers are to be elected, to wit:—

A Judge of the Court of Appeals, in the place of Freeborn G. Jewett.

A Secretary of State, in the place of Christopher Morgan.

A Comptroller, in the place of Washington Hunt.

A State Treasurer, in the place of Alvah Hunt.

An Attorney General, in the place of Ambrose L. Jordan.

A State Engineer and Surveyor, in the place of Charles B. Stewart.

A Canal Commissioner, in the place of Nelson J. Beach; and

An Inspector of State prisons, in the place of Isaac N. Comstock;

All whose terms of service will expire on the last day of December next.

Also, a Justice of the Supreme Court, for the First Judicial District in the place of Samuel Jones, whose term of service will expire on the last day of December next.

Also, a Senator for the Third Senate District, in the place of William Hall.

Also, a Senator for the Fourth Senate District, in the place of John L. Lawrence.

Also, a Senator for the Fifth Senate District, in the place of Samuel Frost; and

Also, a Senator for the Sixth Senate District, in the place of Wm. Samuel Johnson;

All whose terms of service will expire on the last day of December next.

The following officers are also to be elected for the said city and county:—

A Judge of the Court of Common Pleas, in the place of Michael Ulshoeffer.

A Judge of the Supreme Court, in the place of Aaron Vanderpool.

Sixteen Members of Assembly.

A Sheriff, in the place of John J. V. Westervelt.

A City and County Clerk, in the place of James Conner; and

A Coroner, in the place of Wm. A. Walters;

All whose terms of service will expire on the last day of December next.

[The Electors throughout the State are also to vote for or against the adoption of the act entitled "An Act establishing Free Schools throughout the State," passed March 26 1849.]

CHRISTOPHER MORGAN,

Secretary of State.

SHERIFF'S OFFICE,

New York, July 21, 1849.

The above is published pursuant to the notice of the Secretary of State, and the requirements of the Statute in such case made and provided.

JOHN J. V. WESTERVELT, Sheriff.

All the newspapers in the county will publish the above once in each week, until the election, and then hand in their bills for advertising the same, so that they may be laid before the Board of Supervisors, and passed for payment. See Revised Statutes, Vol. 1, Chap. 6, Title 3, Article 3, Part 1, Page 140.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc., by

JOHN A. ROEBLING, Civil Engineer, Pittsburgh, Pa.

These Ropes are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO. PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.

CHARLES F. M. GARNETT, Chief Engineer.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection on and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the completion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sand stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.—Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYNN,

Chief Engineer J. R. & K. Co.

Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co. Newark, Ohio, October 17, 1849.

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 miles track with H rail (58 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY, Superintendent, etc,

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS

OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished

at short notice; also, STEEL SPRINGS

of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,

ELIJAH PACKARD,

ISAAC MILLS,

SPRINGFIELD, MASS.

1y48

A New Paper for the New Year.

The Subscriber, having met with public favor (which he takes this occasion to acknowledge,) as foreign correspondent, contributor and editor, has now determined, by the advice of friends, to work for himself, and carry into effect plans which have been long and carefully considered, for the establishment of a journal in Boston, which will combine the leading features of the best weeklies of the Old and New World. Early in December next, he will commence the publication of

THE AMERICAN SENTINEL,

A General Newspaper and Weekly Review; To appear once a week, printed with clear new type on substantial white paper, with occasional illustrations, and to be enriched with original articles, from contributors of merit,

—ON—

Political Economy, Biography, The Military, Agriculture, The Fine Arts, Science, Foreign Scenes, El Dorado, Literature, Free Masonry, History, Antiquities, Table Talk, Popular Rights, Romance and Reality, Social life, Mechanics, Finance, Commerce, Poetry, Philosophy, Diplomacy, Travels, The Drama, etc., etc.,

AND ITS DISTINGUISHING FEATURES WILL BE

I. *Perfect Independence*; being influenced by no party organization, and confident that whoever speaks the truth out of a sound heart, will find an echo in public opinion.

II. *Liberality of Sentiment*; combined with manliness of expression on all occasions.

III. *The Regular Employment of Able Contributors*; both at home and abroad, each one of whom will have a separate department under his charge.

IV. *Freedom from Deceit*; by rejecting all quack medicine and other advertisements calculated to mislead the public. No book will be reviewed until it has been read; no music recommended until it has been heard; no invention eulogized until it has been examined, and no exhibition praised until it has been seen—nor can favor ever be purchased at a stated price per line.

V. *Purity of Style and Expression*. While illustrating the present and the past, earnest endeavors will be made to edify and amuse, but not to pander to vicious tastes by searching into the world's foulest corner for plague blotches, in order to profit by the loathsomeness of the exhibition.

In general, THE AMERICAN SENTINEL will be a high toned Register of passing events, ever ready to defend the honor and interest of the United States, and always on the *qui vive* for novelty, wit and humor. For the first time in his life the proprietor asks public support, pledging himself to give his paper that independent, high toned and popular character which the above outline promises.

The price of the American Sentinel will be two dollars per annum, payable in advance—three copies in one envelope, five dollars. A liberal allowance will be made to agents. BEN: PERLEY POORE.

Railroad Iron.

THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, and manufactured in conformity with special specifications.

They offer also to import and contract to deliver ahead—on favorable terms.

DAVIS, BROOKS, & CO., 68 Broad street.

New York, Oct. 11, 1849.

Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. D., B. & Co. Oct. 11, 1849.

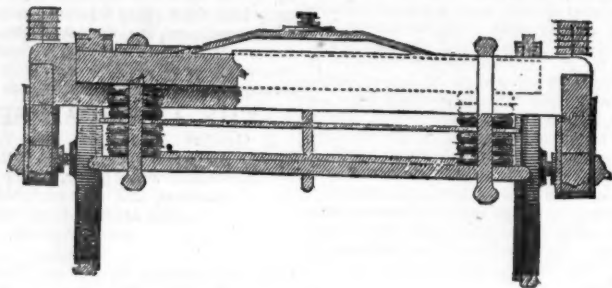
To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Salsus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.

Albany, August 18, 1849.

FULLER'S PATENT INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1845.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organized under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are G. M. KNEVITT, 38 Broadway, N. York, General Agent for the U. S.; and JAS. LEE & Co., 18 India Wharf, Boston. JOHN THORNLEY, Chestnut st., Philad.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent, JOSEPH P. PIRSSON, Civil Engineer, 5 Wall st.

Railroad Iron.

1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ " "
580 " " 53 " "

of the latest and most approved patterns. For sale by BOORMAN, JOHNSTON & CO., 119 Greenwich street. New York, Oct. 13, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffer's Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by E. & G. W. BLUNT, No. 179 Water St., cor. Burling Slip. New York, May 19, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

RAILROAD

India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metallic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever. F. M. Ray, 98 Broadway, New York. E. CRANE, 99 State Street, Boston.

May 24, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4½ p. m., Philadelphia at 10 p. m., and Baltimore at 6 a. m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore. STOCKTON & FALLS. October, 1849.

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by E. S. NORRIS.

April 11, 1849.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,

Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,

Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,

Civil Engineer, Vicksburg, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same. August 4th, 1849. M. M. White, Agent, autif No. 74 Broadway, New York.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscoggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukee, Wisconsin.

BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND ATTORNEY FOR PATENTS. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. Burr Hewson, Civil Engineer, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, Civil Engineer,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates. Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, Civil Engineer,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED'—'Potomac' and other good brands of Pig Iron.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

IRON.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms.

ILLIUS & MAKIN.
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co. Albany; Menitt & Co., New York; E. Pratt & Br. 1st, Es. 2nd, Md.

LAP—WELDED WROUGHT IRON TUBES

FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron.

THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1849. New York.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President
Troy, N. Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N. Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phoenix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehanna river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing. Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.**FOR SALE,**

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge " "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " "
50 " Catoclin " "
250 " Chikiswalungo " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x 1/2 Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" " "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

New York.

64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, *Hot Blast Charcoal Pig Iron* made at the *Catoclin* (Maryland), and *Taylor* (Virginia), *Furnaces*; *Cold Blast Charcoal Pig Iron* from the *Cloverdale* and *Catawba*, Va., *Furnaces*, suitable for *Wheels* or *Machinery* requiring *extra strength*; also *Boiler and Flue Iron* from the mills of *Edge & Hilles* in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled and Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and *Rich & Cos. New York Salamander Iron Chests*.
Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES
for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the *Caledonian Tube Company*, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, Patentee.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover Iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, Agents.
17 Burling Slip, New York.

October 30, 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.

100 " No. 2 do. do. do.

300 " Nos. 2 & 3 Forge do. do.

100 " No. 2 Glendon do. do.

140 " Nos. 2 & 3 Lehigh Crane do do.

100 " No. 1 Pompton Charcoal do.

100 " New-Jersey Blooms

50 " New-Jersey Faggoting Iron, for shafts

Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.

Do do Rounds and Squares, 1/2 to 3 inch.

Rounds and Squares, 3-16 to 1 inch.

Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.

Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.

Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon. Best warranted Cast Steel—square, flat and octagon. Best double and single Shear Steel—warranted.

Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L Blister Steel.

Best English Blister Steel, etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

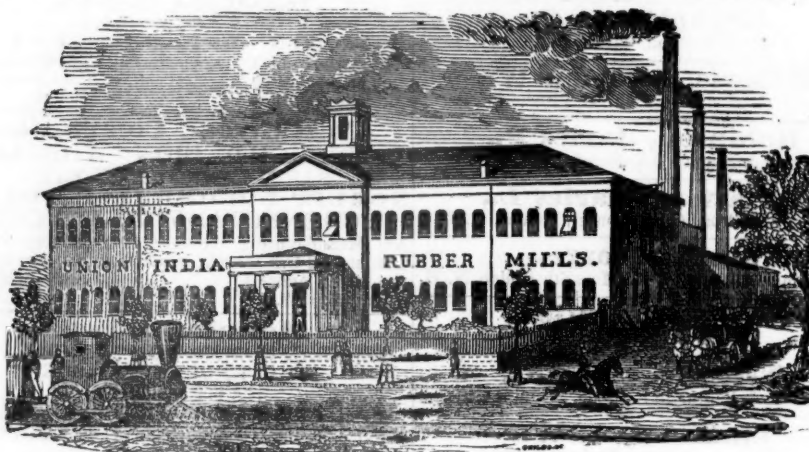
May 6, 1848.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.

The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.
May 28, 1849.

HEAD QUARTERS FOR RUBBER GOODS.**The Union India Rubber Company,**

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,

NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

Beds,
Pillows,
Cushions,
Caps,
Tents,
Bottles,
Tubs,
Caps,
Pants,

Overcoats,
Leggins,
Syringes,
Canteens,
Buoys,
Maps,
Sheet Gum,
Tarpaulins,
Life Jackets,

Life Preservers,
Boat Floats,
Souwesters,
Gun Cases,
Portable Boats,
Horse Fenders,
Water Tanks,
Army Goods,
Navy Goods,

Mail Bags,
Breast Pumps,
Saddle Bags,
Clothing of all kinds,
Carriage Cloth, assor.
Hospital Sheetting,
Mattress Covers,
Bathing Caps,
Baptismal Pants,

Camp Blankets,
Travelling Bags,
Wading Boots,
Horse Covers,
Piano Forte Covers,
Railroad Gum,
Hose, all kinds,
Shower Baths,
Chest Expanders.

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc., will be sold to the Trade at Factory prices.

All orders for special articles to be manufactured, should be accompanied with full descriptions and drawings.

October 20, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction. Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.

August 24, 1848.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each, having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,** Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**
at Beaver Meadow, Pa.

May 19, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—*Ful-ler's Patent*—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. **G. A. NICOLLS,** Reading, Pa.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

- 2 Wrought Iron Cranks, 60 inches from centre to centre.
- 1 Do. do. Connecting Rod Strap.
- 2 Do. do. Crank Pins.
- 1 Eccentric Strap.
- 1 Diagonal Link with Brasses.
- 1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

To Railroad Companies.

FOR SALE.—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia. September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also thoroughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained. Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

HART & MUNSON,
Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING.

This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationary Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose; where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC

Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by **JOHN W. LAWRENCE,** 142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the parallel ruler, plane scales and protractor.

2d. Examples for drawing plans, sections and elevations of Buildings and Machinery, the mode of drawing elevations from circular and polygonal plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to Isometrical drawing, with 4 plates of examples.

4th. A treatise on Linear Perspective, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES. Published by **WM. MINIFIE & CO.,** 114 Baltimore St., Baltimore, Md.

Price \$3, to be had of all the principal booksellers.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

F. S. & S. A. Martine,

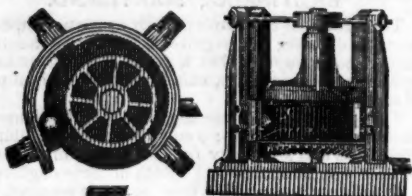
IMPORTERS and Jobbers of Railroad Car and Carriage Linings, Curtain materials, Plushes, etc., 122 William Street,

Ferdin'd S. Martine. N. York. Steph. A. Martine.

3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union Damasks, Moreens, Rattinets, Cloths, Silk and Cotton Velvets, English Bunting, Plushes, etc.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kensington, Philadelphia Co.,
March 12, 1848.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

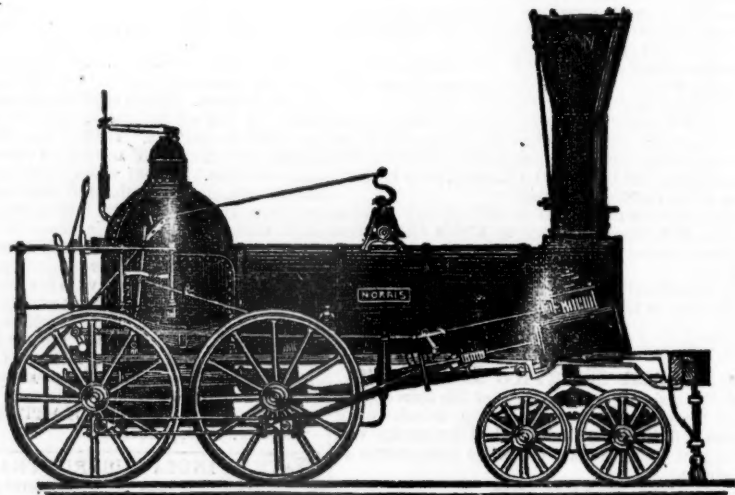
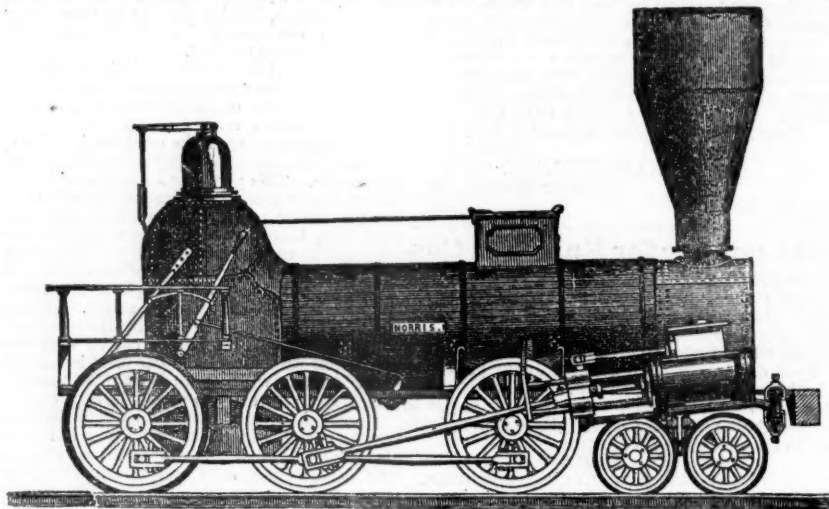
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds—including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.